King & MacGregor Environmental Inc.

April 9, 2010

Hand Delivered

Ms. Melanie Haveman
United States Environmental Protection Agency, Region 5
77 West Jackson Boulevard
Chicago, Illinois 60604-3590

Re: Michigan DNRE File No. 09-52-0086-P
Woodland Road, LLC Comparison of Alternatives

Dear Ms. Haveman,

We are providing this comparison of the alternatives involved in the proposed Woodland Road project separately from the response to your letter/comments submitted to the DNRE dated March 17, 2010 in order to provide you and the DNRE more time to evaluate the comparison of alternatives. Our response to your letter/comments on the application for permit will be forthcoming.

This analysis provides a relative comparison of the approximate wetland impacts for each of the alternatives but is not intended to depict the actual wetland impacts that may result if a full road design were to be superimposed on each route, which would include changes of horizontal and vertical alignments of the road to meet safety design standards. In our experience the actual wetland impacts will be higher once the actual road design is implemented, but the relative change of the wetland impacts should be comparable for all alternatives if road design were to be done for each.

After the meeting with federal agency personnel and Department of Natural Resources & Environment (DNRE) on April 1, 2010, we revisited the comparison of alternatives that had been provided. As discussed at the meetings, we were directed to compare the alternatives using the same methodology in order to provide a comparative assessment of the wetlands impacted and the stream crossings involved. In order to provide an equal comparison using the same method as the other alternatives, we did not use the Woodland Road route as proposed in the application for permit but instead used the route on the existing Wolf Lake Road and Trail 5 for this comparison of impacts of the alternatives. This alternative is named the Wolf Lake Road-Trail 5 Alternative in this document (and numbered Alternative 6a) to distinguish it from the Woodland Road route quantified in the permit application. The State of Michigan Final Wetland Inventory (FWI) was used to determine wetland impacts and the Michigan Geographic Hydrography Framework (Framework) was used to locate stream crossings on all of the alternatives considered.

We were also requested to provide a comprehensive list of all stream crossings involved with each alternative and to distinguish the existing stream crossings from new stream crossings. In regard to listing new stream crossings, once we analyzed this factor we determined that nearly all of the stream crossings using this methodology to compare the alternatives are existing stream crossings because we were using existing roads for the alternative routes. Therefore we did not list new stream crossings.

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You suggested during the meeting on April 1, 2010 that we might utilize aerial imagery available on Google Earth® to locate streams that are not on the Framework. We attempted to utilize this aerial imagery to locate the very small streams that do not show on the Framework data base, but these small streams (e.g. less than two feet in width) are generally not visible due to tree/shrub canopy and scale of the imagery. However, it became evident to us that using aerial imagery to locate very small streams would result in non-comparable data. Therefore, due to the fact that the Framework appears to be as reliable a source of stream data that is readily available and it appears to provide a valid comparison of the streams on each alternative, Framework was the only source of stream locations used for this comparison.

As we have discussed, DNRE staff has suggested that more details be provided for several additional alternatives that had not been presented in the application for permit. These alternatives include the Peshekee (Alternative 7); Red Road to North Lake Road (Alternative 8); Red Road to Greenwood Road (Alternative 9); and Red Road to Sleepy Hollow (Alternative 10). These alternatives are included in this comparison, as well as CR 550 (Alternative 2), CR 510 (Alternative 3), and Dishno Road (Alternative 4).

The proposed Woodland Road is Alternative 6 in the application for permit. Also, Alternative 1 is a railroad (as compared to trucking) and Alternative 5 is the Mulligan Truck Trail, both of which were deemed by Woodland Road LLC to be not available for purposes of this permit application. Therefore these three alternatives are not shown on the tables below.

Methods

To compile the wetland impacts for the alternatives, the centerline of the proposed road was superimposed on the existing roads or trails in each alternative route. The next step was to determine the typical road cross section that applies to each segment of the alternative route.

The typical road cross sections are shown on page two of the alternative plans. The road cross section is used to determine an approximate area of wetland fill for each segment where wetlands are encountered by the route. The station numbers where each cross section was applied is provided with the typical cross sections on page two of the drawings.

Drawings are provided for each of the alternatives listed above that depict the route centerline, stationing, wetlands, and streams crossed. Tables are included that list the station-to-station where wetland impacts are located, the length and width of the wetland impact, the location of the wetland impact (left or right side or both), and the area of wetland impact. The stream crossing table provides the station and name of the stream at each crossing.

Another important factor that we analyzed in this latest comparison of the alternatives for the proposed Woodland Road was the land ownership adjacent to the alternative routes. This factor is pertinent due to the effects of upgrading

the existing roads on the adjacent private properties and their owners and also relates to the potential difficulties for obtaining easements for construction that may need to deviate from the existing road rights-of-way.

Results

In Table 1, the private versus public parcels adjacent to each of the alternative routes are shown. The "public" parcels include the timber company properties as well as state-owned lands.

Table 1. Private vs. Public Parcels Adjacent to Alternative Routes.

Alternative	Total Route Length[1]	Adjacent to Private Property	Percent Adjacent to Private Property	Adjacent to Public Property	Percent Adjacent to Public Property	Number of Private Parcels Influenced
4-Dishno Road	123,500	19,350	16%	104,150	84%	26
6a-Wolf Lake Road-Trail 5	130,200	27,350	21%	102,850	79%	42
7-Peshekee	170,100	61,350	36%	108,750	64%	62
8-Red Road-North Lake Road	228,650	137,400	60%	91,250	40%	185
9-Red Road-Greenwood Road	219,950	125,300	57%	94,650	43%	202
10-Red Road-Sleepy Hollow	220,100	91,650	42%	128,450	58%	134

[1] Lineal Feet; total route length is from US 41 to Triple A Road/Trail 5 Intersection

Table 2 provides a comparison of the pertinent attributes of all of the alternatives considered using the methodology explained in this letter.

Table 2. Comparison of Alternatives Considered for the Woodland Road.

Route Alternative	Length of Route (miles)[2]	Projected Wetland Impact (acres)[3]	Projected Stream Crossings[4]	Total Projected Road & Bridge Construction Budget[5,6]
Alternative 2: CR 550	60.1	0.7	4	$32,000,000
Alternative 3: CR 510	51.2	10.2	29	$60,000,000
Alternative 4: Dishno Road	29.9	35.8	17	$44,000,000
Alternative 6a: Wolf Lake Road-Trail 5	24.7	21.5	13	$45,000,000
Alternative 7: Peshekee	38.5	34.5	25	$61,000,000
Alternative 8: Red Road to North Lake Road	50.8	31.1	28	$80,000,000
Alternative 9: Red Road to Greenwood Road	47.9	29.1	30	$78,000,000
Alternative 10: Red Road to Sleepy Hollow	40.8	21.4	27	$76,000,000

[2] Total Length of Route – This is the Total length, in miles, from the County Road AAA and Trail 5 intersection to the US 41 and County Road FY intersection.

[3] Projected Wetland Impact – The wetland impact is estimated using the Final Wetland Inventory. An assumed typical road cross section is used to calculate the width of impact that an alternative route will have for a calculated length of impact.

[4] Projected Stream Crossings – Stream crossings are estimated by using the Michigan Geographic Hydrography Framework. Generally, if a stream crossing shows up in the Framework, there is a high probability that the crossing is a major crossing that would require a bridge-type structure.

[5] Costs do not include any construction on US-41 or streets in the City of Marquette.

[6] Construction budgets shown are estimates for contractor costs to build the road. Approximately 20% additional cost should be added to these estimates for additional geotechnical work, structural details and engineering, preparation of construction drawings, construction management, and construction inspections/testing (QA/QC).

As shown in Table 2, Alternative 2 (CR 550) has the least wetland impact (0.4 acre). The next lowest wetland impact is Alternative 3 (CR 510) with 10.2 acres. Alternative 6a (Wolf Lake Road-Trail 5) and Alternative 10 (Sleepy Hollow) have essentially the same wetland impact (21.5 and 21.4 acres respectively) but Alternative 10 has 27 stream crossings compared to 13 for Alternative 6a.

The complete set of drawings prepared for this analysis has been sent to you by overnight shipping and should be in your office on Monday morning April 12, 2010. We have also sent a set of drawings to Mike Smolinski, Cary Gustafson, Ginny Pennala, Christie Deloria-Sheffield and Jean Battle. A CD containing an electronic copy of the drawings was sent to the recipients of this letter that did not receive a set of plans.

Thank you again for your consideration of these materials. We look forward to discussing this analysis of alternatives with you in detail when we meet April 27-29. In the meantime if you have any questions please contact me at your convenience.

Sincerely,

King & MacGregor Environmental, Inc.
Charles L. Wolverton
Project Manager for Woodland Road LLC Application for Permit

cc: Colleen O'Keefe, DNRE
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